



Aviation Weather Information System Challenges for Special Populations

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Special Populations

Visual considerations

- Visual acuity
- Accommodation (bifocals)
- Color discrimination
- Visual access

Aural considerations

- Aural discrimination

Attention & Memory considerations

Dexterity / Mobility considerations

- Input interface precision, strength

Medical / drug effects



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Aging



Special Populations

Visual considerations

- Visual acuity
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Aural considerations

- International Deaf Pilots Assn.

Mobility considerations

- Reach inside cockpit
- Access

Attention & Memory

Medical / drug concerns

Aging

Experience

Skill

Wisdom



Special Populations 1 – Incidence

Literature Review

- Aging research
- Accidents / Incidents in transportation
- Assistive technologies in automobile / aircraft use

FAA CAMI Data

- Demographic data
- Medical certification / SODAs / Special Issuance

AvWeb Survey

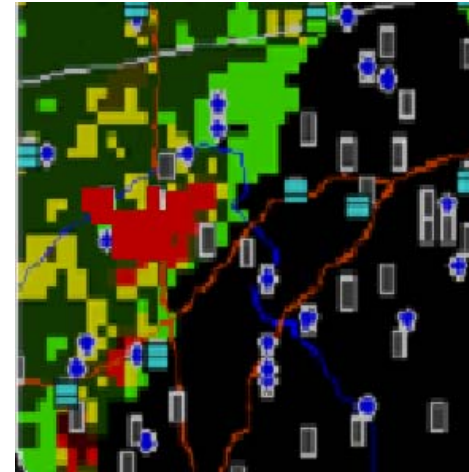
- Evidence of difficulties
- Personal experiences with certification
- Experiences with assistive technologies



Special Populations 2 – Color Vision

Literature Review

- Color vision deficiencies
 - 8% males, 1% females
 - Inability to distinguish green/red
- Methods for redundant coding
 - *Daltonization*



FAA CAMI Data

- Color vision deficiencies in GA pilots
 - 3rd class medicals -> 10352 have CVD, 5434 restricted

GA Cockpit Avionics (AWIN)

- Assessment of existing systems
- Design guidelines / assistive technologies



Special Populations 3 – Auditory

Literature Review

- Auditory deficiencies in general population
 - 19,500,00 adults are hard of hearing
 - 350,000 profoundly deaf Americans (*65,000 children*)
- Details of accident / incidents / situations
- Assistive technologies (*EMI considerations*)

FAA CAMI Data

- Auditory deficiencies in GA pilot population
 - ~200 deaf pilots US & Canada

GA Cockpit Avionics

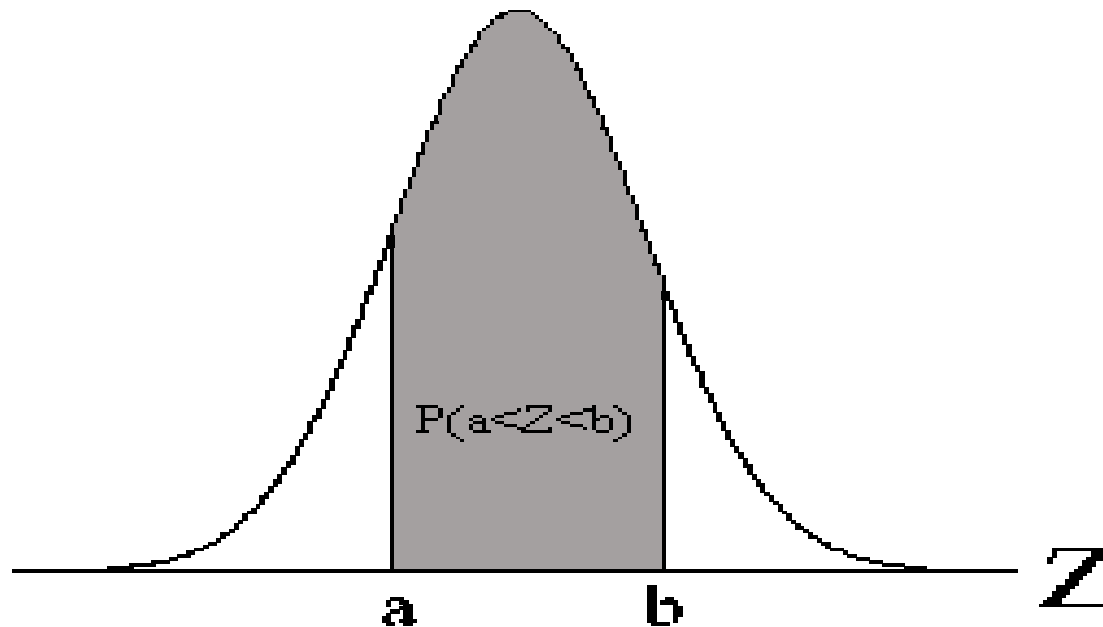
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Designing for Populations

Define a “Normal” pilot...

and exclude ... or endanger ...

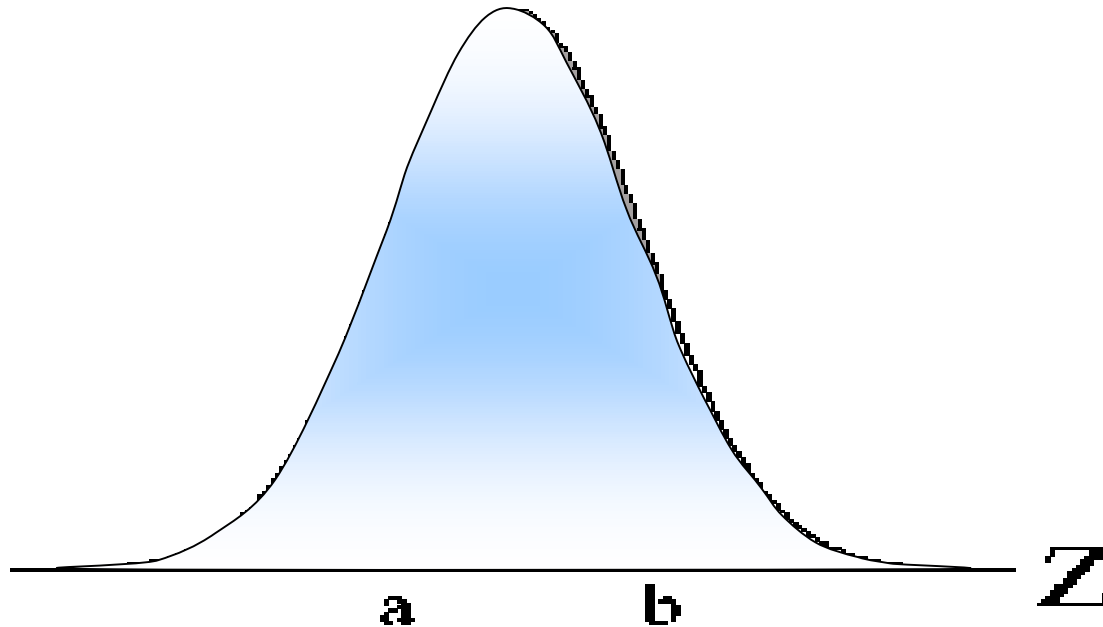




Designing for Populations

Define a “Normal” pilot...

and exclude ... or endanger ...



Or create accommodating designs...

and include... and be safer...